

REMARKS

This application has been reviewed in light of the Office Action dated March 18, 2003. Claims 17-22 are pending in this application, with Claims 17, 20, and 22 in independent form. The original Claims 1-16 have been cancelled, without prejudice or disclaimer of the subject matter presented therein, and have been replaced with newly added Claims 17-22 to more clearly define Applicant's invention. Favorable reconsideration is requested.

The Office Action includes several objections to the drawings. In particular, Figures 3 and 4 were objected to as not adequately demonstrating how output line 10 connects to switches 9 and 14, and Figure 3 was objected to as not including reference numerals 9-1 and 9-2, which are mentioned in the specification. In response, Applicants are amending these figures to include reference numerals 9-1, 9-2, 9-3, and 9-4, instead of reference numeral 9, and to connect output line 10 to the dotted lines connected to the switches 9 (now 9-1 to 9-4) and 14. Please refer to the attached copies of Figures 3 and 4, showing the above-described changes in red. In accordance with the revised amendment format, corrected drawings incorporating these changes are being prepared, and will be submitted as soon as they are complete. Applicant notes that the specification has also been amended to refer to switches 9-1 to 9-4, instead of just 9, 9-1, and 9-2.

Figure 4 was objected to as not including the image pickup unit and peripheral scanning circuit 2 mentioned at page 10, lines 22-23 of the specification. In response, Applicant has amended this portion of the specification to properly refer to the image pickup unit and the peripheral scanning circuit 30.

By these amendments to the figures and drawings, Applicant submits that the objections to the drawings have been remedied and respectfully requests their withdrawal. Applicant believes that no new matter has been added by these amendments.

The specification was objected to for mentioning parts of the invention shown in the drawings without including their reference numerals. In response, Applicant has carefully reviewed and amended the specification to include the missing reference numerals. Applicant believes that the objection to the specification has been obviated, and therefore, its withdrawal is respectfully requested.

Claims 5, 6, 7, 8, 10, 11, 12, 14, and 16 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly not particularly pointing out and distinctly claiming the subject matter which Applicant regards as the invention. Applicant has cancelled Claims 1-16 and has replaced them with Claims 17-22, which are submitted to comply fully with the requirements of Section 112. Accordingly, withdrawal of the Section 112, second paragraph rejections is respectfully requested.

The original Claims 1-16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over various combinations of the admitted prior art (“APA”), U.S. Patent No. 5,164,832 (Halvis et al.), U.S. Patent No. 6,130,710 (Yasuda), U.S. Patent No. 5,278,656 (Hynecek et al.), and U.S. Patent No. 5,576,757 (Roberts et al.).

Applicant submits that newly added independent Claims 17, 20, and 22, together with the remaining dependent claims, are patentably distinct from the proposed combination of the cited prior art for at least the following reasons.

Claim 17 requires a sensor chip formed on a single semiconductor chip. The sensor chip includes: an image pickup portion, a scan circuit, a drive pulse generation circuit, a reference clock signal generation circuit, a terminal, and a switch. The image

pickup portion includes a plurality of photoelectric conversion elements. The scan circuit reads out a signal from the image pickup portion. The drive pulse generation circuit generates a drive pulse for driving the scan circuit. The reference clock signal generation circuit generates a first reference clock signal. The terminal inputs a second reference clock signal from outside the sensor chip. The switch effects switching so that the drive pulse generation circuit generates the drive pulse for the scan circuit on the basis of one of the first reference clock signal and the second reference clock signal.

A notable feature of Claim 17 is the switch that effects switching so that the drive pulse generation circuit generates the drive pulse on the basis of one of the first reference clock signal and the second reference clock signal. Support for this feature can be found in the specification at least at page 5, line 22 to page 6, line 9, which is described in reference to Figure 3. This portion of the specification describes, as amended, the

switches 9-1 to 9-4 for selecting either the clock signals from the microcomputer 2 or the clock signal of the reference clock generation circuit 7 and the preliminary operation mode generation circuit 8; and an output line 10 from the microcomputer 2 for selecting the states of the switches 9-1 to 9-4. The voltage on the output line 10 is for example at a low level in case the microcomputer 2 is turned off, whereby the switches 9-1 to 9-4 select the outputs of the internal reference clock generation circuit 7 and the preliminary operation mode generation circuit 8, but assumes a high level in case the microcomputer 2 is turned on whereby the switches 9-1 to 9-4 select the pulses of the drive mode control wirings 3 and the reference clock wiring 6 from the microcomputer 2.

Such an arrangement reduces power consumption by allowing the microcomputer 2 to be in an off-state when the system is in a preliminary operation mode. See page 8, lines 16-22 of the specification. Conventional apparatuses require the microcomputer 2 to be on even in a preliminary operation state. See page 2, line 21, to page 3, line 11. (It is to be

understood, of course, that the scope of Claim 17 is not limited to the details of this embodiment, which is referred to only for purposes of illustration.)

The admitted prior art described at pages 1-3 of the specification, and shown in Figures 1 and 2, does not disclose such an arrangement of switches that allows for the selection of two different clock signals for driving the image sensor chip 1. As discussed at page 2, lines 16-20, the conventional operation and timing of an image sensor chip 1 is determined by the microcomputer 2. That is, the conventional operation technique only uses a clock signal from the microcomputer 2 and does not allow for the choice between using two different clock signals to drive the image sensor chip 1. Accordingly, the admitted prior art does not teach or suggest a switch that effects switching so that the drive pulse generation circuit generates the drive pulse on the basis of one of the first reference clock signal and the second reference clock signal, as recited in Claim 17. The admitted prior art only allows for the usage of one reference clock signal.

Halvis et al. is referred to in the Office Action to teach a plurality of photoelectric conversion elements and readout circuitry formed on the same semiconductor substrate. (See pages 4-5 of the Office Action.) Even if Halvis et al. is deemed to teach such a feature, Applicant submits that nothing in this reference would teach or suggest a switch that effects switching so that the drive pulse generation circuit generates the drive pulse on the basis of one of the first reference clock signal and the second reference clock signal, as recited in Claim 17.

Further, none of the other cited references, Yasuda, Hynecek et al., and Roberts et al. are understood to disclose the switch recited in Claim 17. Accordingly, Applicant submits, at least for the reasons discussed above, that Claim 17 is patentable

over the admitted prior art, Halvis et al., Yasuda, Hynecek et al., and Roberts et al., taken separately or in any proper combination.

Independent Claims 20 and 22 include the switch as discussed above in connection with Claim 17, and are believed to be patentable for at least the same reasons.

A review of the other art of record has failed to reveal anything that, in Applicant's opinion, would remedy the deficiencies of the art discussed above, as applied against the independent claims herein. Therefore, those claims are respectfully submitted to be patentable over the art of record.

The other claims in this application depend from one or another of the independent claims discussed above and, therefore, are submitted to be patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, individual consideration of the patentability of each claim on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and the allowance of the present application.

Applicant's undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,



Attorney for Applicant

Registration No. 24613

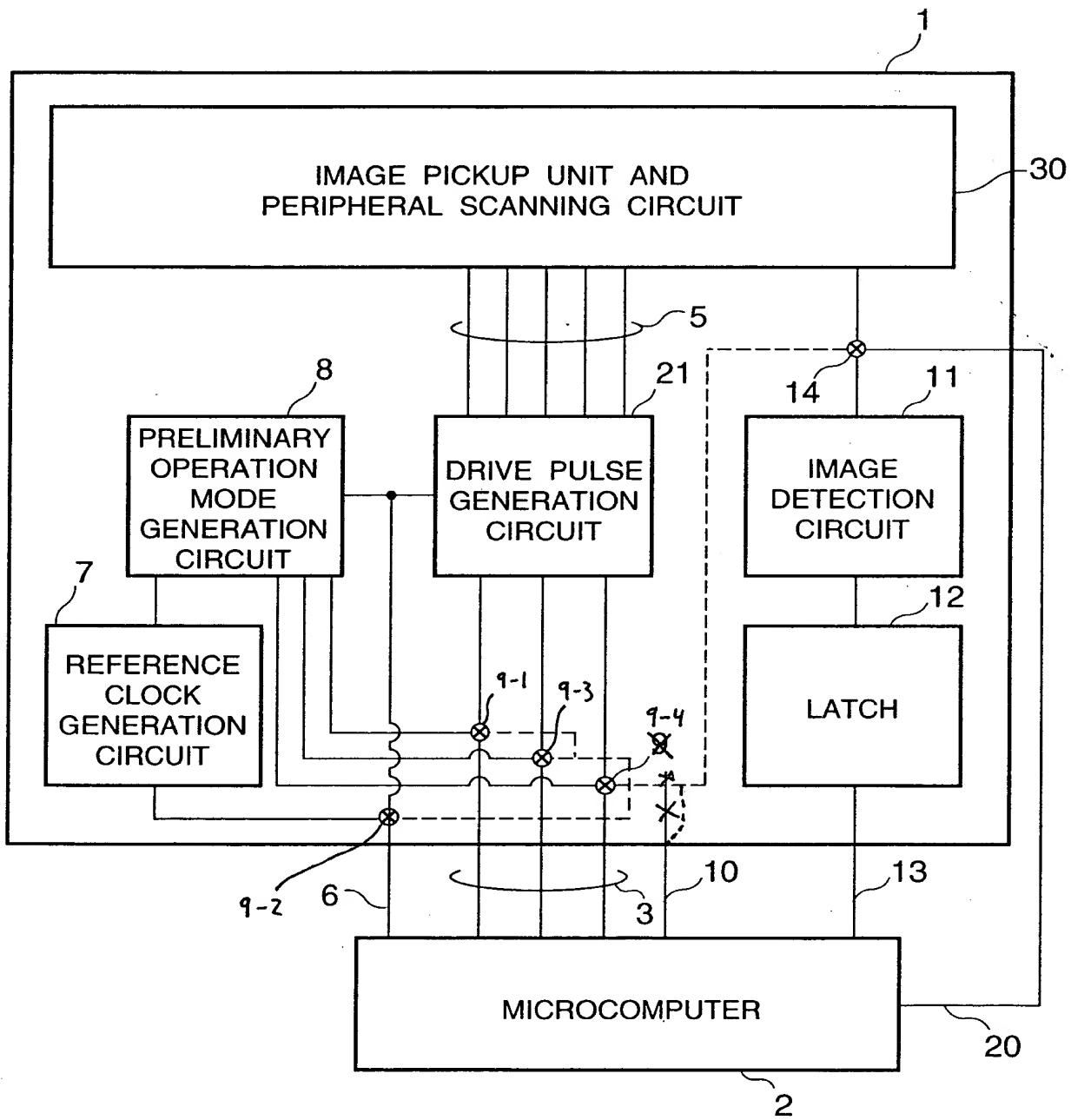
FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200

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FIG.3





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FIG.4

